

# California

SEPTEMBER-OCTOBER 1975

Volume 66, Number 5

Fifty Cents



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## EVENTS

- September 6 & 7: San Diego Turtle & Tortoise Show, Majorca Room; Saturday 12:00 noon to 5:00 p.m.; Sunday 10:30 a.m. to 5:00 p.m.; FREE.
- September 27 & 28: San Diego Bonsai "mini" Show, Majorca Room; Saturday 10:00 a.m. to 7:00 p.m.; Sunday 10:00 a.m. to 6:00 p.m.; FREE.
- October 4 & 5: San Diego County Orchid Society "mini" Show, Majorca Room; Saturday 11:00 a.m. to 5:30 p.m.; Sunday 10:30 a.m. to 5:30 p.m.; FREE.
- October 18 & 19: San Diego Ikebana Society Exhibit; Majorca Room open both days 10:30 a.m. to 4:30 p.m.; FREE.
- October 26, 1975: Convair Garden Club presents their Mum & Fall Vegetable Show; Majorca Room, 1:00 p.m. to 5:30 p.m.; FREE.
- October 27, 1975: Los Angeles Garden Club & L.A. District of Garden Clubs presents "The World Flower Festival" at the Embassy Ballroom, Ambassador Hotel, Los Angeles, \$7.50 includes luncheon. For further information contact Mrs. Samuel B. Nesbitt, 5338 Hillcrest Drive, Los Angeles, CA. 90043.
- October 11 & 12: North County Rose Club, 9th Annual Rose Show; Escondido Village Mall; Saturday 1:00 p.m. to 6:00 p.m.; Sunday 1:00 p.m. to 5:00 p.m.; FREE.

## MEETINGS

Workshops each Thursday from 10:00 a.m. to 3:00 p.m. at the Floral Office beginning September 4th and continuing through October 30th.

- September 11, 1975: Christmas Workshop by Adrienne Green; 1:00 p.m. to 3:00 p.m. Room 101, Christmas wreathes, trees and swags.
- September 16, 1975: Horticultural Panel Discussion, Room 101, 1:30 p.m. featuring horticulturist Jim Gibbons from the Wild Animal Park and Bob Murphy horticulturist from Balboa Park
- October 7, 14, 21, 28: Adrienne Green presents Artistic Workshop for arrangers; 1:30 to 3:30 p.m. Room 101.
- October 21, 1975: Regular Floral Meeting honoring new members at 7:30 p.m. Room 101 or Patio depending on the weather.
- October 29, 1975: Beverly Kulot teaching the secrets of treated flower pictures; 10:00 a.m. to 3:00 p.m. plus a \$5.00 charge for materials.
- October 28, 1975: Mrs. Kirkpatrick starts her Flower Arrangement Classes; 10:00 a.m. Room 101.

## TOURS

- September 20, 1975: Newport Beach-Balboa Island Trip; visit lovely Fashion Island at Newport, enjoy a delightful 1½ hour boat trip around the islands. Enjoy viewing homes and gardens; depart from Balboa Park at 8:00 a.m.; La Jolla Library at 8:30 a.m.; cost \$10:50 includes the boat ride.
- October 16 & 17: Fall trip to Idyllwild and the back country; depart from Balboa Park at 8:00 a.m. and the La Jolla Library at 8:30 a.m.; cost \$8.00.
- November 15, 1975: Ensenada trip—scenic trip down the coast of Baja California, visit Rosarita Beach Hotel, with time for shopping in Ensenada; cost \$12.00.

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Many thanks to Eileen Vance for proof-reading.

ABOUT THE COVER

Our front cover is created by Jannan Kennedy, an artist living in La Jolla. She received her art training in Germany, is a member of the Village Garden Club of La Jolla, and also studies sculpture.

The back cover is the artwork of Sally Bancroft and some of her artwork will be appearing throughout up-coming issues.

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# PLANT SUCCESS INDOORS

by BETTY NEWTON

ENOUGH LIGHT is the indoor plant's most basic need. Therefore, where you may want a plant may be altogether too dark. Leaves will yellow and stretch out. It is far better to use graceful dried foliage in such a spot.

All the plants listed in this article are grown essentially the same. They all like east or west window light (or 14 hours of florescent light) and to be thoroughly watered when dry down to a level of one-half to three-quarters of an inch. One list is of plants needing above average humidity. Another suggests which plants you can try in slightly less light. Then there are those which need a south window and others which should not go to the light of an east or west exposure. Also there is a "beginner's list" of easily grown plants.

Four factors other than light are important: temperature, humidity, soil and water. Most of the plants listed will be very happy on a porch or patio if protected from frost.

Some tropical plants love heat. They will thrive under the outside vent of an air conditioner or on your top shelf in winter with the heat on inside. Please note the plants which do not like to be above 70°, because they may be unsuited to your living room in winter. A thermostat set at 68° saves fuel as well as your plants.

Clay pots will dry out much faster than plastic ones. Some plants may wish to be watered when the top of the soil dries out and others, such as succulents (listed under the "South Light" list) may use less water than you'd expect them to. Let these dry almost entirely before thorough watering. Remember that one inch of water on the top of the soil should wet to a depth of six inches. Most of the other plants listed should be dry down one-half to three-quarters of an inch before watering.

For soil, I use perlite combined with sand and bonemeal along with "humusy" potting soil.

Loam is lovely, but we have little of it in this arid climate. Just some plain dirt will add a little heft to your mixture and also a few nutrients. To fertilize, use fish emulsion or a commercial type fertilizer with a balanced formula such as 10-10-10 or 12-8-6, but NEVER 22-00. Please take a good look at the numbers.

I have found no problems in moving plants indoors from the growing field or lath house as long as they are given good indoor light and not too much water.

Sometimes I make mistakes and naturally I'm still learning too. Experimentation is good but just plain "reading up" is better. Some reading material that is a must for every gardener is Sunset's Western Garden Book, California Garden Magazine and 128 Houseplants You Can Grow by Rob Herwig (for about \$1.75).

## BEGINNER'S LIST

- CREEPING CHARLIE
- WANDERING JEW
- ARROW LEAF OR TRI-LEAF
- POTHOS
- SCHEFFLERA
- GRAPE IVY
- SPIDER PLANT
- UMBRELLA PAPYRUS

### Has a Firm Grasp, Beside the Point

By Mrs. L. R. Albertson

Wayne, Nebr.—To avoid being stuck by rose thorns when I prune, I carry a clip clothespin to hold each stem as I work.

## EXTRA HUMIDITY LIST

- BIRD'S NEST FERN
- BOSTON FERN
- MAIDENHAIR FERN
- DIEFFENBACHIA
- • COLUMNEA
- DRACAENA
- HOYA
- MARANTA
- PEPPEROMIA
- PHILODENDRON
- PILEA
- STRAWBERRY BEGONIA

## LESS LIGHT LIST

- ASPIDIATRA
- AGLAONEMA
- ASPARAGUS FERN
- BIRD'S NEST FERN
- BUTTON FERN
- BOSTON FERN
- CLIVIA
- FATSHEDEA
- FATSIA
- FICUS
- GRAPE IVY
- HEDERA IVY
- MARANTA
- MONSTERA
- PALMS
- POTHOS
- SPIDER PLANT
- ROSARY VINE
- SAXIFRAGE
- SCHEFFLERA
- SYNGONIUM
- WANDERING JEW
- SANSIVERIA

## EAST/WEST WINDOW ONLY

- ASPIDISTRA VARIEGATA
- CISSUS VOMERIENSIS
- CYANOTIS
- CREEPING CHARLIE
- OXALIS
- PILEA DEPRESSA
- PODACARPUS
- POLYPODIUM FERNS
- • CAMPANULA
- HELXINE
- JACOBINEA
- LEATHERLEAF FERN
- VELTHIMIA

## SOUTH WINDOW LIGHT

- ABUTILON
- BEAUCARNEA
- BEGONIA
- CUPHEA HYSOPHELIA
- EUPHORBIA
- KALANCHOES
- PANDA PLANT
- NEPOLEON'S HAT
- SHRIMP PLANT
- VICTORIAN BOX
- CARRION FLOWER
- TERNSTOMEIA
- GYNURA
- SILVER FLAME

### CODING INFORMATION

- plant needs 40° to 60° temperature
- plant needs 50° to 70° temperature
- plant needs 65° to 85° temperature
- plant needs extra water



# SKILL WITH FLOWERS

by KAY YARNELL

WHEN THE French Impressionist painter, Pierre Auguste Renoir, was asked to define what was needed to make a great masterpiece, he is said to have replied—"Look at the number '10'. Suppose we say that '1' stands for talent and '0' stands for determination and effort; alone, neither amounts to much, but combined they become '10'; something much greater than the sum of the two or either alone."

So it is with another art form, flower arranging. Start with a love of nature and thrill to the colors, shapes, and textures of flowers, branches, and rocks around us; next, have a desire to combine them in such a way that their true beauty is shown to its best advantage; then have the patience and determination to learn how this may be achieved; and finally, the willingness to practice until one is truly able to make the magic happen. You then come up with an arrangement that gives a thrill to the arranger and the viewer alike.

This is surely what the founders of the San Diego Flower Arrangers' Guild had in mind back in August 1960. That is when the group of twenty-one congenial ladies, having the respect for each other's ability, decided to meet regularly for the purpose of furthering the art of flower arranging. This same purpose has continued on down to the present day. They knew that it was necessary to study and practice to improve. Like any other skill, one has to use it in order not to lose it.

The early Guild members brought with them a background mainly of Western Styles that sprang largely from European and Early American influences. As new members joined their group, some brought the knowledge of Ikebana, the Art of Japanese Flower Arranging, learned in Japan or from teachers who had studied there. At their regular meetings each member brought an arrangement which she discussed with the others, resulting

in an exchange of ideas as each learned from the comments of others. Consequently, today although separate styles are still shown, it is hard to distinguish a good Japanese free style from a good Western free style. This mingling of styles was ably pointed out in an article entitled "East Meets West" by President Helen Ard in the March-April 1972 issue of CALIFORNIA GARDEN MAGAZINE.

This year the San Diego Flower Arrangers' Guild, an affiliate of the San Diego Floral Association, presented a Flower Show in the Casa del Prado in January. They demonstrated with some twenty-four arrangements various ways to enhance the beauty of camellias for the San Diego Camellia Society Show in February of this year and the San Diego County Orchid Society awarded them a silver trophy for having the most artistic display at the beautiful show in April of this year. □

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hate constant  
feeding.

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# THE SENSORIAL TRAIL

by BARBARA JONES

THE SENSORIAL TRAIL is a concept of saving the environment of the past (environment in its natural unaltered state) for everyone. The trail is planned for a relatively small hillock near the tip of Point Loma on the grounds of Cabrillo National Monument that has had very little man-made changes. Large native plants abound and wild birds and animals are abundant. At one end of the proposed trail the climate is sheltered and warm, further on the ocean breezes vary from mild to very strong. Part of the trail is above the ocean and the sound of the ocean waves is just as it was two hundred (and many more) years ago. There is a small grove of dwarf trees introduced by Kate Sessions in the area, too.

This is a new concept in interpretive trails that will enable everyone to gain a learning experience despite any physical or mental handicap. The complete experience will be a sensory one using any one or all of the senses within each of us. The sensorium is the entire sensory apparatus, including sense organs and their nerve centers. The means used to interpret the area will be called "Sensorial Rail". This rail will be an eight inch fiberglass channel approximately three feet off the ground, suspended by three foot pipe mounts approximately three feet on center. The rail will be approximately 1000 feet long. Scale size sculptural interpretations of the plant, animal and bird life will be built into the rail as is necessary to interpret the area. A braille text as well as one in English and Spanish will be used. A six foot wide foot path, finished in earth colors will be constructed.

This will be a permanent trail on National Monument land that will be protected against vandalism. As this is the most visited National Monument in the United States, this trail would be a fitting bicentennial gift from the residents of San Diego County to our country.

Palomar District of California Garden Clubs, Inc. (National Council of State Garden Clubs, Inc.) has taken this as a bicentennial project. Members are helping to raise the funds for this trail.

Anyone wishing to contribute to this worthy cause may write for information to "Sensorial Trail Fund", 3971 Del Mar Avenue, San Diego, CA. 92107. Contributors' names will be placed in a permanent book in the Monument Library, and all will be listed in the dedication program. □

## Be careful with fire: There are babes in the woods.

And those baby animals and trees need a place where they can grow up strong and healthy. The forest is their home. When you come to visit, please don't burn it down.



Advertising contributed for the public good

# LONG LASTING DESIGNS

by ADRIENNE GREEN

Photos by Betty Mackintosh

HOW CAN arrangements be made to last longer? Suggestions to increase the life of a living design are to select plant materials which possess a durable nature, cut them in the late afternoon or early morning, place the stems in deep water treated with "Hormex" or a similar vitamin compound, and replace any evaporated water daily in the finished arrangement.

Usually foliage remains fresh longer than flowers. In the designs here, the one with the water bird uses only foliage—*Phormium* (New Zealand flax), *Nephrolepis* (Sword Fern) and *Aucuba japonica* (Gold Dust Plant).

Behind the figurine a heavy needle cup holder (6" X 3" X 2" deep) secures the stems in place. The design rests on an irregularly shaped base of slightly darker wood than the cypress bird. The strong vertical thrust of the figure is accented by the stiff flax. The softer sword fern suggests "feather like folded wings" as it embraces the body curves. The fern contrasts in texture and form to the flax and the bird. The spotted *Aucuba* echoes the pointed bill and tail, again offering a pleasing contrast in texture and form to the other design components.

When combining plant material with a figurine the purpose of the designer is to enhance the work of art. A subtle natural wood bird like this one is a happy companion to these few pieces of foliage.

If properly conditioned green calla lilies and their leaves will remain fresh for as long as two weeks. The arrangement pictured broke all records by lasting almost three.

Before arranging calla lilies, the stems of the flowers and foliage are placed in a bucket of water treated with "Hormex" for several hours. The flax needs no special handling.

The pottery container which contains a large needle holder is also filled with the "Hormex" solution.

A dried wisteria branch harmonizes in texture and color with the swirling circular pattern on the pottery's rough surface.

The two curves of the branch enclose spaces not unlike the silhouette of the flower heads.

Three stalks of flax grouped together establish the "main line" of the design. Calla lilies in graduated stages of development move down the flax at slightly different angles, gradually becoming larger. The heaviest concentration of leaves and the showiest bloom are in the lowest area of the arrangement.

Green calla lilies with their own foliage along with bronze *Phormium* are excellent choices for a long lasting living sculpture. □



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GOING ON vacation and haven't got a sitter for your house plants? You can make a "home greenhouse" to take care of them while you're away, says Bev Tree who supervises the air-rich indoor park at the Hyatt Regency San Francisco hotel.

Here's what this veteran horticulturist suggests: layer several newspapers (the thicker the better) on a plastic drop cloth in the bottom of your bathtub, put the plants in the tub and turn on the shower long enough to wet leaves and soil as well as the newspapers. Now pull the shower curtain, and drape another plastic drop cloth over the top, attaching one edge to the back wall with masking tape, so as to form a tent or greenhouse.

Leave the light on in your bathroom—and your plants should be in tip-top shape when you get home, says Bev who has been caring for the lagoons and trees, the flowers and plants that cool the indoor park and hanging gardens of the hotel's soaring 17-floor interior lobby. These vast airy courtyards filled with forest green and the brilliant colors of flowers and birds are breathtaking.

For smaller plants, another vacation alternative is to water the plant thoroughly, then put a plastic bag over the plant and seal it around the top of the pot with a rubber band. It may be wise to dig a small stick into the earth, extending above the leaves to keep the bag from weighing on the plant. Leave a nearby light on—but keep the plant out of direct sunlight.

This advice does not apply to African Violets, cacti and succulents or any other plants whose leaves rot easily. For such plants, it is best to buy a plant wick from your hardware or garden supply store. This will transfer water from a nearby jar by capillary action as the soil dries out. □



# EUCALYPTUS ANYONE?

by HELEN WITHAM

Photos by Anne Galloway.

OLD Ben Elliott was a promoter in the young town of Encinitas in the boom days of the 1880's. Ben promoted lot sales and naturally he wanted his lots to look attractive when the "Saturday Special", otherwise known as the "Sucker Train" came down from Los Angeles. So, he planted trees. Great! Trees have a special appeal here in southern California.

Ben's trees were special too; they were planted on Friday and pulled out on Monday—said trees being cut branches of eucalyptus. With their firm, rich green leaves they made good "weekend trees", and how was a sucker to know? There is no record of anyone's leaning too hard against a tree, or pulling one up to examine its root system. Why would they? This was California where things were magical anyway.

You may think that they have always been here, those great eucalyptus trees that shape the skyline of coastal southern California. That is because they have been here ever since you can remember, unless your age is far over the century mark. It is reported that the eucalyptus was introduced to cultivation in California in 1856 by a Mr. Walker of San Francisco who planted seedlings of 14 species in that year. From 1870 onward they were planted in increasing numbers, for timber, forest cover, fuel, shade and windbreak.

It has been said that more eucalypti have been planted as exotics around the world than any other kind of forest tree. Wherever the climate suits them, and some surprising places have turned out to be suitable, they have been planted for both ornament and utility. We find them used as sources not only of lumber and fuel, but of tannin, oil and honey, and as improvers of climate in such far-flung places as India, North and South Africa, the Mediterranean shores of Europe from Spain to Asia Minor, and our own Southwest.

A recent visitor to South America tells of

seeing them growing at 12,000 feet near the city of Cuzco, Peru. Many of Cuzco's heavy tile roofs are supported by eucalyptus timbers. There is a puzzle here: No trees are growing native on this high plain, yet these Australians are not only growing but flourishing. If this climate is suitable for them, why aren't there any native trees?

The eucalyptus was introduced to the western world in 1777 when Captain James Cook sailed into Adventure Bay on the coast of Tasmania on his famous "Voyage to the South Pole". William Anderson, the naturalist accompanying Captain Cook, first referred to the plant as "Aromadendron" (aromatic tree), but it was officially named *Eucalyptus*. I wish Anderson's name had stuck—it's so much easier to spell!

*Eucalyptus*, from the Greek words meaning "well" and "cover" refers to the peculiar structure of the bud which is a "box with a lid". The lid is actually the fused corolla and calyx. When the stamens expand at flowering time, the box opens around the middle and the lid falls off, leaving a neat flange at the top of the calyx-tube. If the bud does not behave in this fashion, the tree is not a eucalyptus.

The calyx-tube itself hardens into the woody, extremely hard and durable fruit beloved of the pod-and-cone collectors. When the numerous pepper-like seeds mature, the capsule opens three to six valves in the outer end, from which the seeds are shed, or may be shaken. If you wish to try growing your own trees from seed you will probably find that many of the seeds are infertile. The good seeds from each capsule are larger, heavier and darker in color than the much more numerous infertile seeds. Plant the black ones, not the chaffy, light-colored ones.

There is tremendous variation in the size and shape of the bud, but all kinds of eucalyptus flowers

open in the same way—all 600 of them. In a genus as large as this, the problems of classification and identification are almost insurmountable. There is no totally satisfactory means of quick and easy identification. The most satisfactory system that has so far been devised, a card-sort key, is unfortunately out of print at the present time. The simple task of sorting out likenesses and differences among 600 species is compounded by the fact that everything about the eucalyptus is extremely variable. Descriptions are filled with so many long strings of adjectives, "or's" and "more or less's" that you are left wondering whether you are looking at the plant being described.

This variability extends throughout the genus and to every part of the plant. Leaves, for example, vary from kind to kind and even from tree to tree of the same kind. They vary in color—green, blue, white, red, gray—and each of these can be plain or "ish-y"; or a leaf may be of different colors on its two surfaces; or the tree may have leaves of several colors. The size and shape vary, as do thickness, venation, aroma, number and arrangement of oil glands, and leaf arrangement on the stem. Juvenile leaves on seedlings and stump sprouts often are round or oval, while adult leaves on the same tree are long and narrow. These adult leaves are alternate on the stem while in many cases the juvenile leaves are opposite. Did you count how many pairs before they started alternating? You'd better if you want to make a positive identification.

To add to the complexity of the problem here in California, we are told by Australian authorities that we have "kinds" here they don't have over there. That is, natural hybrids that occur only here for some unknown reason, perhaps because the parents do not occur together in Australia.

The big "gums" (a name that came with them from Australia) are mainly of three species: *Eucalyptus globulus*, Blue Gum; *E. cladocalyx*, Sugar Gum; and *E. camaldulensis*, Red Gum. On the higher land, on hills and mesas, the Sugar Gum is that one with the high, clean, long-slanting branches holding puffs of foliage against the sky. Its seed capsules are tiny brown barrels.

On the lowlands and in the long lines of old windbreaks, the Blue Gums are those tall rather narrow towers of blue green foliage carried on

stout trunks from which the bark peels in long inward-curving strips. Their deep green is accented during the long flowering season by the powdery blue of the buds and the cream-white of the flowers. Juvenile leaves, on stump-sprouts or seedlings, are of a distinctive blue-gray color. These leaves are set opposite for many pairs, on square stems.

The other big gum is the Red Gum. These broad massive trees with long drooping branchlets are seen occasionally in parks and on old farmsteads. They are seldom planted any more; they're just too, too much tree for most places.

Most of the large plantations made around the turn of the century resulted from the get-rich-reasonably-quick promotion of the eucalyptus as a source of hardwood timber. While the trees grew rapidly to saw timber or pole size, the product proved disappointing. It was tried with some success as pilings, less success as railroad ties, and great success as cordwood.

Many of those plantations were of Blue Gums. Blue Gums planted as saplings in gardens, parks, and along highways and streets, apparently with little regard for the fact that they are essentially towering forest trees, resulted in bowed and broken sidewalks, exasperated leaf-raking householders and costly removals. That has caused people to shy away from planting anything named eucalyptus, under the mistaken impression that all eucalypti are forest giants forever dropping something that must be gathered up and disposed of. This is unfortunate, since the list of those suitable for garden and even patio use is a long one.

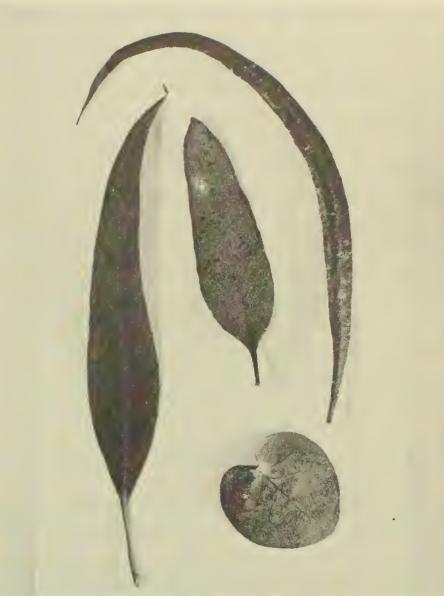
Among the smaller "eucs" (gardener and nurseryman's language) are trees and shrubs to suit almost any landscape need. If your wish is for colorful flowers, interesting fruits, fragrant foliage, handsome bark or picturesque habit, there's a euc to fulfill it. At the present time more than 150 species are grown in California and more or less available in nurseries. Species new to California are being tried out by the University of California at Davis, the Los Angeles State and County Arboretum at Arcadia, and our own San Diego City Park Division.

Probably the single most helpful reference on the cultivated species is *Sunset Western Garden Book*, which lists fifty of them in chart form, with information under several headings including

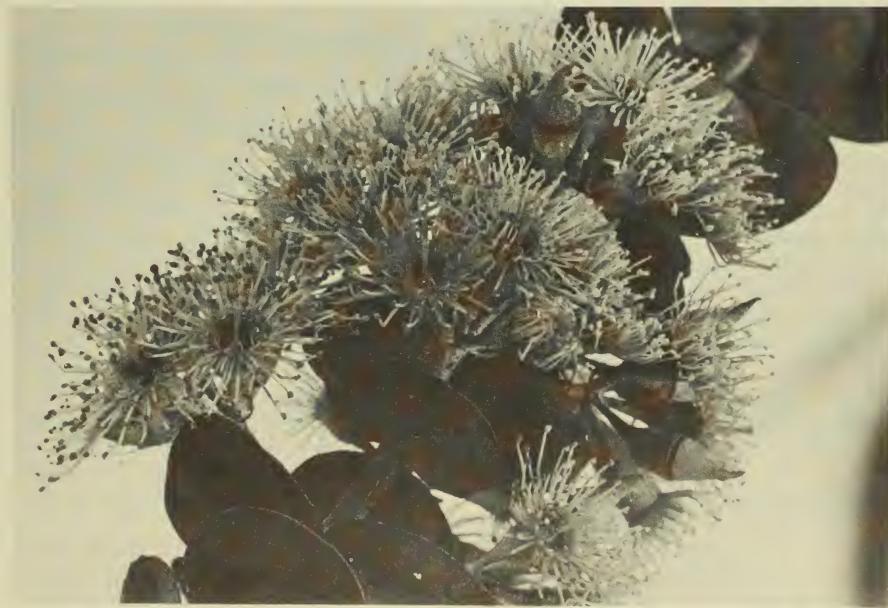
hardiness, form and size, leaves and bark, flowers and fruit and best features and how to encourage them. Eucs grow fast, tolerate a wide variety of soil conditions, flourish with little irrigation, or none, after becoming established, and perhaps best of all, never have to be sprayed against insects.

In this connection it was rather startling to hear an Australian visitor, Director of Brisbane's Botanic Garden, say of eucalyptus: "Oh, we don't plant them; we don't consider them good trees; their leaves are always eaten away. . . ." So, what do we have that their homeland doesn't have? We have only seed-grown plants, so no Australian pests have ever had an opportunity to hitch-hike in, and our local insects don't care for the cough syrup flavor of the eucalyptus.

So when you next think "new small tree", do consider planting a euc or two. A few suggestions: for showy flowers, *E. megacornuta*, *E. macrocarpa*, *E. erythrocorys*, the "Red-Cap Gum", or *E. preissiana*; for interesting foliage, try *E. orpettii* or *E. platypus*; for red, fuchsia-like flower bases, try *E. forrestiana*. □



ABOVE: Leaves come in many shapes and sizes.



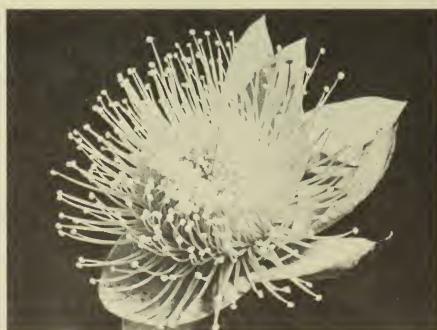
ABOVE: Flowers have no petals; the color is in the stamens.



ABOVE: Seed capsules after stamens have fallen.



ABOVE: Lids or caps of the "boxes" (buds).



ABOVE: *Rhodantha* means "roselike" flowers. Flowers of the *Eucalyptus rhodantha* are three inches wide and pink. They may also be red, orange or yellow.

# HYDROPONIC GARDENING

by ROSALIE GARCIA

OLD IDEAS COME back in style, sometimes just for the novelty or sometimes because a need arises from a new life style. Apartment living, condominium ownership and the scarcity of growing space have forced people to grow flowers and vegetables in tanks of pebbles, sustained by chemicals dissolved in water. This process is known as hydroponics; "hudor" from the Greek meaning water and "ponos" meaning working, or "water working" gardening. This technique appeals to the dainty and fastidious, for one does not need to get their hands or feet dirty. It also appeals to those who have a scientific twist and feel they are amateur scientists, because timing, temperature and measurements must be exact.

The first records of experiments of growing plants in water cultures is over three hundred years old and was done by John Woodward, an Englishman of the Royal Society of England. He did not find out much, but his experiments stuck in the minds of chemists who flourished in the 19th Century when that science really came into its own. One of our own University of California chemists, Dr. William F. Gerich, grew tomatoes in a tank outside his house and really astonished everyone with his 25-foot plants and yields of bushels of tomatoes. Nearly every chemist copied his experiment and had the neighbors gawking at the roof-high tomatoes.

As we can note in our supermarkets, especially in winter, we have beautiful red tomatoes for sale at around eighty cents a pound. Great commercial greenhouses flourish in southern California and at least one in San Diego County in the Valley Center area grows tomatoes. Since a tomato is about ninety per cent water, this plant adapts well to hydroponic gardening.

The cold and desert countries such as Russia and the Arabian desert countries have great green houses where temperatures can be controlled

and vegetables and flowers are grown for select markets. They still cannot do them cheaply, but there is no doubt that they will expand, for no other method of producing fresh plants is feasible. If we ever do get to living on space platforms and man-made islands in the ocean, "soillessness" will be an ever present problem. Already on some of the tropical islands there now is so little soil, such gardens are now flourishing, and did so during the wars in both Europe and the Pacific. Our own San Diego Zoo raises tons of grass for the animals in trays on racks in seven days by the soilless method.

How does one get started growing plants in water? There are many starter kits offered by commercial enterprises priced as low as \$30.00, all of which furnish styrofoam trays about the size of a baby bath tub with gravel, a pump and mixed nutrients and directions. This size can be used indoors in a window, on a patio, or may be used with artificial lights. One can also buy ready made greenhouses with trays, benches, lights, pumps and air conditioning from \$500 to \$2,000, depending on the size and your budget.

Starting small and learning would appear to be the best way. A real do-it-yourselfer can do the project with almost no investment by making trays from fruit lugs lined with plastic, old kitchen sinks or kegs. The styrofoam containers have given the best results.

A very good book in the public library is James Sholto Douglas' **BEGINNING GUIDE TO HYDROPONICS**. He gives a good background on how plants grow, absorb nutrients, the formulas for the nutrients, and where one may buy them (mostly drug stores and nurseries). He takes for granted that you are disciplined and exacting in nature. All instructions are definite and in detail with illustrated drawings.

Planting instructions, kinds of seeds and depths

to be planted are listed for individual plants in this book. He also lists other aggregates (planting media) besides pebbles—the pros and cons of each. Buying plants from the nurseries is not recommended, for all soil must be washed away which would leave the roots of these plants exposed to shock. But, they do recover more quickly than they would in soil. Since the aggregates are not so solid as soil, plants over a few inches high need supports and the author lists ways of supporting your plants—plastic strips tied to overhead supports, stakes or lattices.

One may grow plants outside in the sun, but there is lack of protection from the elements, pests and diseases. The best results are obtained inside specially built greenhouses of plastic where temperatures can be controlled, pests kept out and proper humidity maintained. Everything can be managed here, and soilless gardening does best when managed according to known techniques. Of course, experimentation is constantly going on.

Another bonus of the water garden is the speed of growth. A vegetable that normally takes sixty days for maturing in the soil may develop in about forty-five days or even thirty days or less in the water. A salad tray of lettuces, radishes, cresses, parsleys and green onions will be ready for harvest in less than thirty days, and can be perpetual, by planting a seed where one plant is pulled out. One can also crowd plants so they support each other and shade small plants, for there is no such thing as depletion. Nutrients are added at stated intervals and remain constant.

There are still the warm weather and cool weather vegetables, but one can have both all the year by controlling the temperatures.

My personal observation is that hydroponic grown vegetables lack some of the flavor that our dirt grown ones have, but they often have a crisper texture which is especially noted in the salad vegetables and cabbages.

The practice of growing flowers and vegetables in the same tray adds beauty, interest and variety to your garden. There is no end to the experimentation and creativity one may induce even in one tray in a kitchen window. It will also be a barometer to warn about the quality of the air in the house. If the plants turn yellow or begin to wilt, there is too much or too little oxygen, gas or

carbon dioxide around and the problem should be remedied. □

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# SUCCESS WITH FERNS

by MILDRED MURRAY

THE OLD fashioned "Boston Fern", *Nephrolepis exaltata* 'Bostoniensis', was a treasure in our grandmother's parlor. Often it set on a table in a bay window. The parlor was cool and the plant was watered enough for dampness with the large plant helping to cause water to condense on the glass, thus giving it a naturally humid condition. Without central heating, homes were kept cooler.

Today if you want to grow ferns beautifully indoors, you need to return to the less heated interiors. Actually this is a benefit to humans as cooler more humid conditions are better for our own skin. Increasing the humidity with trays of damp sand or pebbles and spraying with mist or fog and keeping many plants close together is helpful; however, turning the thermostat down will do more toward healthy plants and people. Should you think of the fact that commercial growing is warm, also remember their houses are much wetter than you would want to live with in your home.

Lower temperatures cause higher relative humidity. Cooler air absorbs less water than warm air which means the moisture in a room will have more absorptive capacity in a cool room. Also, evaporation is reduced at lower temperatures so plants do not dry out as fast. Still another advantage is that insect activity decreases as the temperature becomes lower.

Overwatering will not help humidity—actually water which does not drain away drowns the plant by filling soil spaces causing a lack of oxygen bearing air which the roots need for respiration. In watering the object is to keep the soil mixture damp, never drying out completely and NEVER having the plant stand in water. Watching your plants every day to check dampness insures more healthy growth. A finger into the mix is a good plan. A very loose porous soil with good drainage is a must for ferns.

Ferns do not have as many insect problems

as some plants. Scale and mealybugs may cause some trouble. The best way to stop this trouble is frequent trips to the kitchen sink to wash away any insects with a forceful spray of tepid water. Any eggs on plants are washed down the drain. Your Q-tips from the bathroom are still the best way to remove mealybugs.

Plants like to be fed regularly with a fertilizer. A tablespoon of liquid fish solution in a quart of water once a month will keep ferns lush green and growing—if in good light (not direct sun) with plenty of humidity.

Unless you have a greenhouse, there are still many ferns which will grow in our homes. Maidenhairs do well and are lovely because of their delicate fronds. The Latin name *Adiantum*, means "unwetted" due to the fact that water flows off the fronds without seeming to wet them. They should be kept cool and protected from snails and slugs. They will look better most of the year if given a "hair cut" just before heavy spring growth. Should many new croziers (fiddle heads) already show, maybe you should cut fronds separately. To cut straight across the plant will cause a more beautiful plant with less die-back of fronds during the remainder of the year.

The Birdsnest Fern, *Asplenium nidus*. makes a good show in the house. The Mother Fern, *Asplenium bulbiferum*, makes a striking contrast to the leathery fronds of the Birdsnest. (The common name is due to the fact that small fernlets appear along the top edges of mature fronds.) The Holly Fern, *Cyrtomium falcatum*, is a sturdy dark green leathery-like plant good for use as additional contrast. Fluffy varieties of the Boston Fern make attractive specimens when groomed carefully. The constant removal of old fronds is a chore but necessary in order to have an attractive plant.

A climbing fern, *Lygodium japonicum* is

surprisingly house-hardy. It looks delicate, but is actually rather sturdy. Like the Maidenhairs, this plant should be cut back to the roots each year.

Artwork by Michael D. Klein  
Wildlife & Botanical Illustrator

Finally—a plea for mercy on the part of your ferns. They do not enjoy being handled. The back of your hand lifting a frond is fine, but to finger fronds will cause a beautiful plant to become an eye-sore. □



# FOLIAR FEEDING

by GEORGE JAMES

THE FACT THAT plants have the ability to take plant food elements through their stems and leaves is generally known, yet there are many who fail to take advantage of the benefits that fertilization through these parts makes possible. There are times when feeding through the stems and leaves, or foliar feeding, is more effective or may be easier than the conventional applications of fertilizer to the soil.

Foliar feeding is more effective than feeding through the roots during cold months of the year because the plant is able to absorb the nutrients through the leaves in the form they are applied, while nutrients applied to the soil have to be converted by soil organisms to a water soluble form before roots can absorb them and this conversion occurs slowly, or not at all, when the soil is cold. Foliar feeding is useful to feed winter annuals, winter vegetables, and other plants that will grow during the cold months.

Plants whose roots have been damaged, as in transplanting, or by cutting, insect or rodent damage, over irrigation, or too deep cultivation, can be helped to recover by foliar applications of plant foods. Other steps which may be helpful to plants suffering from root damage would be the use of transplanting or root forming hormones, cutting back the top of the plant to more nearly balance the reduced root system, misting and shading during hot and dry portions of the year. Plants that are in competition with roots of stronger shrubs and trees can be fed through their leaves and they get all the food and the invading roots get none.

The foliar feeding of plants on slopes, such as ground covers, avoids the loss of nutrients which happens when irrigation water is applied and washes them to the bottom. Large and dense plantings can easily be fed by spraying the foliage from a convenient spot and the plants are not damaged by

being walked on as is sometimes necessary to distribute dry materials evenly. Evaluations are now underway to see if foliar feeding, especially on large areas, will reduce the contamination of ground water which sometimes is caused by the conventional methods of applying fertilizers to the soil.

There are some limitations to the use of foliar feeding. Flower buds or open blossoms are usually stained or damaged if the nutrient solution is applied to them, so it is well not to feed through the foliage while plants are in bloom. It seems likely that trees or shrubs which are fed through their leaves for a period of years may develop a top that is overly large for the root system, and such plants are easily blown over by the wind. The ease and effectiveness of foliar feeding can easily lead to over-fertilization, and this can lead to weak stemmed, poor flowering, insect and disease prone plants.

As with applications of fertilizer to the soil, plants should be well filled with water before applying a foliar feeding. To be sure plants are well filled with water, they should be irrigated one to two days before the application of fertilizer. There are times and places, some of which have been listed, when foliar feeding offers advantages, and there are others where the conventional method of soil application is as easy or as satisfactory.

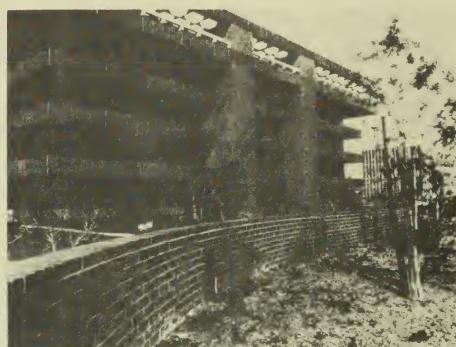
Materials for leaf feeding are readily available. A good grade of liquid fertilizer, one that uses a fish product as its source of nitrogen, is satisfactory, and there are also dry products which are mixed with water to become a liquid fertilizer, which are also suitable for this purpose. Often these products will have directions on the package for use as a foliar application. If the package does not have instructions, it is usually safe to use no more than half of the amount of the concentrate per gallon of water as is directed for use on the roots.

Rain or overhead watering within 48 hours after the application of a foliar feeding will reduce the effectiveness of the application.

A fine, mist-like spray is more effective in wetting leaves than a coarse spray, and a hose end sprayer, made for the application of insecticides, delivers a fine spray. However, there are some thick bodied concentrates, which even when diluted clog the tube which is between the sprayer jar and the sprayer head. This is exasperating and slows up the job of fertilizing because you spend so much time cleaning the sprayer and you never know where it stopped delivering fertilizer—so, you're not sure which plants have been wet with the nutrient solution and which with only plain water. If the liquid fertilizer concentrate you use clogs your insecticide sprayer, you can overcome the problem by using a hose end fertilizer applicator. These differ from the insecticide applicator by having a larger tube between the jar and the sprayer head which is less likely to clog. However, the fertilizer applicator makes a coarser spray so the nutrient solution is more likely to run off the leaves. This is not too serious a problem, as the roots will eventually get the nutrients.

Any sprayer at hand, which will disperse the nutrient solution to the leaves of the plants is suitable for foliar feeding. Even watering cans with a sprinkler nozzle have been used for this purpose and found satisfactory. □

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# CROSS-COUNTRY HITCHHIKERS

ARE YOU MOVING? Traveling? Or swapping plants? If so, you may be spreading plant pests and diseases. Just one destructive pest is all it takes to start an outbreak that can cause millions of dollars worth of damage to personal property, recreational areas, or food crops.

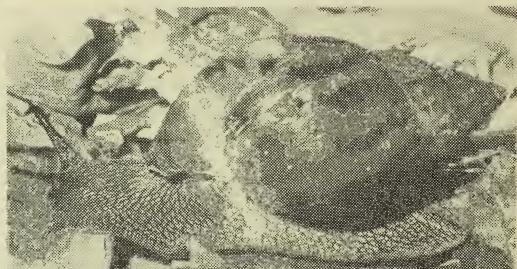
When families relocate and move their own household belongings, they may also be carrying destructive plant pests along to their new homes. Prior to the move, outdoor items such as patio furniture and barbecue grills should be carefully checked and cleaned of all dirt and soil.

Transplanting plants from woods can be a "free ride" into suburban lawns and gardens for destructive and costly plant pests and diseases. Grubs in untreated soil may eat unsightly bare spots in lawns and other suburban turf areas. Japanese Beetles attack flowers, shrubs and trees.

In 1966, a youngster brought two "pet" giant African snails into Florida from Hawaii. The mollusk—which can grow up to a foot in length—feeds on trees, shrubs, flowers and house paint, which it also discolors with its slime trails. More than 100,000 snails were destroyed in the six years it took to eradicate this pest—all descendants of that original pair.

When mailing gifts of fruit or home-grown flowers, or swapping plants with friends, people may also be sending their friends hidden plant pests or diseases.

Many states require that plants from home gardens or other non-commercial sources be inspected and certified "pest free" before being shipped or moved across their borders. Federal and state pest control officials will provide inspection, certification, and any necessary treatments upon request, at no cost to the public. Requesting individuals may have to bring their plants in for treatment in fumigation chambers or the plant inspector may merely "dip" the plants in a protective solution at the owner's home. □



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# HOW I GROW GESNERIADS

by ANNE SHORE

GROWING THESE fascinating plants has suddenly become very important to me. What could I possibly decorate my "room of rocks" with if not greenery?—not just any greenery, but the genus *Gesneriaceae* of which the *Saintpaulia* is a member. My favorites are the exotic and colorful cousins.

The house in which we live is an 86 year old structure embraced by two giant oak trees and situated in a canyon surrounded by mountains constantly yielding a steady visitation of coyotes, rabbits, ground squirrels, bobcats and pack-rats—the latter indulging in a diet of plants followed by fortified oatmeal. But, that's another tale.

This venerable house has a room which we call a den, or more descriptively, a "room of rocks" because of its rock walls topped by windows on two sides. One solid wall adjoins a bedroom and the other wall boasts a highly imaginative fireplace built of geodes, obsidian, copper, coral, petrified wood, lava and other sundry native stone of which I'm not familiar. It was obviously the dream of a rockhound. Pretty it is, but practical it is not. The sun rises in the east, flooding the room with sunlight both winter and summer; the north and south windows provide light and ventilation.

I hunt flea markets, garage sales, and junk shops searching for shelves, open bookcases, tables anything which can be utilized for plants. The latest acquisition is a small table acquired at an estate auction. It's a rather bizarre find—the young woman whose effects were being disposed of had been the victim of an assassin's knife. After painstaking treatment with paint remover and sandpaper, the table is now presentable and holds small bowls and plastic shoe boxes.

Among the Gesneriads I grow are *Episcias*, *Streptocarpus*, *Kohleria*, *Columnea*, *Chirita*, *Nematanthus*, and the "little people of the plant world" the minuscule and delightful *Sinningias*. One

of my favorites is Dollbaby, a hybrid. It has lavender blossoms. The entire plant is no larger than a twenty-five cent piece, consisting of a tiny cluster of quarter inch leaves from which spring thread-like stems topped by flaring five petaled lavender blossoms with white throats. Breath-taking! To appreciate this one more fully, one must examine it through a magnifying glass. The darker lavender veins in each blossom are sharply accentuated. White Sprite, another hybrid, is similar but has white blossoms. Still another hybrid called Bright Eyes, has lavender blossoms.

To extend the list, we add *Sinningia concinna*—Wood Nymph, Fertile Cindy, Pink Petite, and exciting Freckles are all charmers among this group. How rewarding it is to see these diminutive plants in full bloom in glass bowls, brandy snifters or terrariums. They will also adapt well to growing in a hollowed out piece of featherrock set in a glass bowl covered with plastic.

*Sinningias* thrive on humidity. Cultural requirements are relatively simple. Start with a clean container of your choice. Pour in a gently moistened good house plant mix. Sprinkle in a few pieces of charcoal to keep the soil sweet, and then nestle your miniature in a pocket and "firm in" tenderly. Cover the top of the glass bowl or plastic bubble with clear plastic wrap or a piece of glass. If a small amount of moisture appears on the inside of the container or inside the plastic cover, you have done well. It will seldom need watering except for a wee drop of liquid fertilizer about once a month. Mind now—just a wee drop! Any one of these tiny people will delight you with almost constant bloom. Such an endearing plant for a busy gardener!

As one enters my "room of rocks" there is no sudden awareness of humidity such as in a greenhouse. However, my watering program still remains flexible. Some precautions are in effect

though during summer as soils dry out faster. Liquid fish fertilizer—one teaspoon to one gallon of tepid water—is considered safe either for complete pot watering or for misting. A misting two and three times a day in summer, and once a day in winter (on sunny days) is a good idea. You might call this process “fertilizer misting” or “misting with fish”. In my room, water hits the rocks and holds the moisture; there is certainly no need to be concerned with spills because the floor is concrete. If the windows become a little dewy, no panic—there are always paper towels.

Rain water is best for plants, of course, but lacking a constant supply, I try to keep a twenty gallon can filled with tap water and allow it to aerate for a day. Incidentally, this can is outside and not in the house. Using water directly from the tap may cause problems due to salts and chlorine. Water for house plants should always be room temperature and lukewarm is better. Bring in about as much as you will need from your storage can outside, and heat it just a few minutes. Cold water on plants is a tremendous shock.

The plants grow in a mix of any well-known potting soil, supplemented with charcoal, a sprinkling of fish meal, a dash of hoof and horn, and dolomite lime when I think of it, and perlite. For example, when using a pound coffee can as a measure, use one can potting mix, one teaspoon charcoal, one tablespoon fish meal, one teaspoon hoof and horn, one teaspoon dolomite lime, and one coffee can perlite. Mix well, and moisten. This medium is also good for other acid-loving plants such as begonias and ferns.

I use only one propagating medium for cuttings—perlite or Horticultural Propagation Sponge Rok No. 2. My experiences with peat moss have been decidedly disastrous. I do not trust it and am amazed at all the articles which advocate peat mixes. A gardener's prorogative—you either like it or you don't. One word of advice however—if you have success with your present growing mix, don't change it. Experimentation is fun, but do try it on a smaller scale, say one plant at a time. One plant can easily be replaced. So often we hear a speaker tell about his potting mix without a word about his location. What a tragedy! We must learn to grow for our particular area. To

be sure, coastal growing is very different from inland growing.

There is no substitute for a greenhouse or a lath house. At times, and they are often beyond our frustrating control, it becomes a necessity to provide plants with the next best environment. In my case, it's my “room of rocks”. □

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- ✓ to prepare plants for the impending dormant period.
- ✓ to use careful judgement in watering enough to keep your trees from drying out. On hot days, spray foliage after it has cooled in the evening. Even though rapid growth does not occur now, your trees do require water.
- ✓ to transplant trees with care. Extensive root cutting may result in death of the tree. It is better to transplant only from one pot to another similar in size or one size larger. Add new plant material if necessary.
- ✓ to keep any major transplantings for the spring.
- ✓ to prune and trim conifers. Also, trim and shape your deciduous trees. Any wiring required should be done most carefully because the branches are now more brittle than in the summer months.

## BROMELIADS

MARY BIRCHELL

- ✓ to keep surrounding areas damp to maintain humidity.
- ✓ to fertilize by foliar feeding with half strength fertilizer.
- ✓ to flush out plants and keep moist without filling cups.
- ✓ to continue removing off-ssets and pot them separately in loose well-drained medium.

## CACTUS & SUCCULENT

Dr. LEROY PHELPS

- ✓ to keep on the lookout for late flowering mams, neoportetas and species epiphyllums.
- ✓ to give one last feeding, if desired, with a fertilizer low in nitrogen.
- ✓ to anticipate Santa Ana winds—keep moisture in the soil, but otherwise start hardening plants.
- ✓ to redesign any part of your garden that is not "just right".
- ✓ to take advantage of the last chance to repot rootbound plants.

## CAMELLIAS

BENJAMIN H. BERRY

- ✓ to start and maintain a disbudding program.
- ✓ to feed lightly with monthly feedings of 2-10-10 or 0-10-10.
- ✓ to maintain even moisture.
- ✓ to water only in late afternoon during Santa Ana conditions.
- ✓ to maintain a regular spraying program.

## DAHLIAS

ABE JANZEN

- ✓ to spray to prevent mildew and spider mites.
- ✓ to maintain regular watering until first of October, then cut down gradually.
- ✓ to feed with potash only to promote root growth. It helps them to keep better during the winter months.

## EPIPHYLLUMS

GEORGE FRENCH

- ✓ to clear all dead growth and retie stems.
- ✓ to ease force of growth for proper winter hardening, by withholding water; if days are hot, spray for moisture.
- ✓ to repot over crowded plants.
- ✓ to control snails and slugs and other insects.

## FERNS

RAY SODOMKA

- ✓ to spray for aphids, scale, and keep snails, slugs and pill-bugs under control.
- ✓ to fertilize and maintain a schedule.
- ✓ to water and maintain humidity—beware of Santa Ana days.
- ✓ to trim off dead fronds.
- ✓ to plant spore.
- ✓ to buy new varieties.

## FUCHSIA & SHADE PLANTS

WILLIAM SELBY

- ✓ to leach out salts from your pots. White residue outside pots or drain holes and between slats of baskets is alkali-salt. Wash out by filling the container several times with water and letting it drain out.

- ✓ to give a shot of acid feeding.
- ✓ to fertilize with care for a last burst of bloom before winter months.
- ✓ to prune lightly to encourage some new growth as weather cools.
- ✓ to take a few early cuttings as you cut back some leggy growth.

## GERANIUMS

### PHIL BUSH

- ✓ to take cuttings of geraniums and pelargoniums.
- ✓ to keep cuttings in light shade until rooted.
- ✓ to fertilize with high nitrogen 10-5-5, or fish emulsion.
- ✓ to spray for white fly and aphids.
- ✓ to spray soil and under leaves with cygon-E.
- ✓ to watch for snails, slugs or worms.

## IRIS

- ✓ to plant beardless iris—Spurias, Siberians, Louisianas, and Japanese. Keep moist until well established. Louisianas and Japanese are grown with pools or swampy conditions.
- ✓ to still divide and plant clumps of tall-bearded iris. Trim roots and fans half-way before setting out. Normal for the old outer leaves to die back.
- ✓ to plant in October the Dutch Bulbous iris.
- ✓ to seed established bearded iris.

## ORCHIDS

### LOIS DONAHUE

- ✓ to water and mist cymbidiums—maintain humidity and don't let foliage burn.
- ✓ to change to low-nitrogen fertilizer—buds will be forming.
- ✓ to check for any scale or insects and spray accordingly.
- ✓ to clean up greenhouse for winter.
- ✓ to check the heat controls in greenhouses and clean the glass.
- ✓ to let Paphiopedilums dry out.
- ✓ to give all orchids lots of food, water and good light.

## ROSES

### SUE & DICK STREEPER

- ✓ to be watchful for mildew and rust. To prevent problems, spray with a fungicide every two weeks. If rust & mildew are present, eradicate with spraying every five days.
- ✓ to maintain an adequate watering schedule.
- ✓ to let the bushes grow big and healthy. Fall is a highlight of bloom and plants should be allowed to produce lots of flowers and foliage. Rose plants are storing food for the new season and need abundant foliage.

## GREEN THUMB ITEMS

- ✓ to prepare bulb beds—dig in compost, leaf mold or shavings, water and turn several times before planting.
- ✓ to dig and separate *Billbergia nutans* — replant the new ones.
- ✓ to dust and stake Chrysanthemums. Fertilize until bud shows color.
- ✓ to divide Shasta Daisies and transplant Belladonna lilies after blooming.
- ✓ to plant winter sweet peas.
- ✓ to plant in October daffodils, watsonias, scillas and jonquils.
- ✓ to allow tuberous begonias to die back by gradually withholding water.
- ✓ to dig gladiolus and let them dry in the sun until stems separate easily.
- ✓ to lift plant stakes, hose down with water and tie together before storing.
- ✓ to feed established shrubs with a balanced plant food. Water thoroughly.
- ✓ to put edging strips around young specimen trees in the lawn. In addition to making a neater border around the tree, it acts as a "dam" to retain water. To protect the edging from damage or to hide it, place the top edge flush with the surface of the soil.
- ✓ to wrap the trunks of newly planted trees to protect from borers, rabbits, winter sun, etc. Start wrapping two inches below soil line and tie just beneath the lowest limb. Leave in place for approximately three years or loosen as trunk thickens.
- ✓ to label supplies as you finish using them. Close all chemical containers and re-label clearly if original label is unreadable, and store in a locked cabinet or on a high shelf out of children's reach and away from pets.
- ✓ to make sure that partially used sack of fertilizer is closed tight and the label is readable—if it isn't, re-label.

## VEGETABLES

### GEORGE JAMES

- ✓ to begin growing the following from seed: beets, carrots, kohlrabi, mustard greens, parsnips, peas and sugar or edible pod peas, radishes, spinach, turnips and rutabagas.
- ✓ to start the following from plants: broccoli, Brussels sprouts, cabbage, cauliflower, celery, collards. (If plants are not available at your nursery, you can start your own and transplant them when they are large enough. This will delay the maturity of the crop at least thirty days.)

# GROWING BONSAI

This is a two-part article on Bonsai Growing. The second part will appear in the next issue and will discuss the care of the bonsai you have created by reading and following the instructions in this part.

Researched and edited by Craig Silgjord.

BONSAI ARE miniature trees grown in pots. The aim of bonsai culture is to develop a tiny tree that has all the elements of a large tree growing in a natural setting. This look is achieved, principally, by branch and root pruning and shaping, but other factors are also important. The texture of the trunk, its look of age, the moss and under-plantings in the container—all contribute to the illusion of a miniature tree as it is seen in nature.

A presentable bonsai can be created in a few seasons. Cultivating these miniature potted trees is both an intriguing hobby, and a means of adapting a wide range of plants to specialized and decorative uses. Bonsai require daily watering during their growing season, and, because the plants are rooted in shallow pots, careful pruning. Bonsai are kept outdoors most of the year, but—from time to time—these miniaturized versions of nature are brought indoors for display. Only certain tropical trees, shrubs, and vines can be continuously kept indoors full time as bonsai.

Bonsai, as an art form, stems from ancient oriental culture. It originated in China and was developed by the Japanese. In the 13th Century, the Japanese collected and potted wild trees that had been dwarfed by nature. These naturally formed miniatures were the first bonsai.

When the demand for the small trees outgrew the supply, Japanese gardeners began to train bonsai from native trees. They shaped the trees to give them the illusion of age and naturalness. Over the years, the Japanese devised standards of shape and form which gradually became the classic bonsai styles.

American bonsai are much freer in concept and style than Japanese bonsai. American bonsai growers have recognized that the horticultural and aesthetic rules are important, but are specifically aimed at Japanese culture. Because of this, Americans have taken oriental styles and applied them to plants never grown by the Japanese. Therefore, the rigid procedures and names used by the Japanese are not used in this article.

Not all plants are equally effective as bonsai. To produce a realistic illusion of a mature tree, look for plants with the following characteristics:

small leaves or needles, short internodes, or distances between leaves, attractive bark or roots, branching characteristics for good twig forms.

All parts of the ideal bonsai—trunk, branches, twigs, leaves, flowers, fruits, buds, roots—should be in perfect scale with the size of the tree. Plants used for bonsai should have small leaves, or leaves that become small under bonsai culture. Plants with overly large leaves, such as the avocado, will look out of proportion if chosen for bonsai. Sycamores also develop leaves that are too large. Certain species of both maple and oak trees usually respond well to bonsai culture and develop leaves that are in proportion.

Among the plants with small leaves and needles are the spruce, pine, zelkova, pomegranate, and certain oaks and maples.

Plants chosen for bonsai should have attractive bark, and the trunk must give the illusion of maturity. The trunk should have girth, but must remain in proportion to the entire tree. The trunk should taper gradually toward the top of the tree. Sometimes one or two of the main branches must be shortened to emphasize the vertical line of the trunk and give the trunk a balanced appearance.

To give the appearance of age, the upper one-third of the root structure of a mature bonsai is often exposed. This is especially effective if the roots have good girth and form. Twisted and tangled roots should be straightened before potting or repotting a tree to achieve an aged appearance. Bonsai from nursery stock, and trees collected from the wild, should have a root system that will—when exposed—add to the appearance of the finished bonsai.

Plants have a “best profile” just as people do. Decide on the front of the tree at the very beginning, because planting and shaping are done with the front of the tree in mind. However, you may change your ideas about the plant’s ultimate shape as you clip and prune.

The front of a bonsai should offer a good view of the main trunk which must be clearly visible from the base to the first branch, typically about one-third the way up. Everywhere on the tree, but mostly from the front, the branches should look balanced and appear to be floating in space;

they should not appear lopsided or top heavy. The branches should not be opposite one another with their lines cutting horizontally across the trunk. The branches give the bonsai dimension and establish the tree's basic form.

A bonsai should have a harmonious arrangement of branches without unsightly gaps. Flaws can be spotted by looking down on a bonsai. Upper branches should not overshadow lower branches. Before deciding on the shape of your bonsai, study the tree carefully, and take into account the natural form of the species. Observe the way mature trees of the same kind grow in their natural setting to achieve an impression of age and reality.

Decide on the final shape and size of your bonsai before starting. Make a rough sketch of what you wish to create and use it as a guide.

Bonsai can be classified into five basic styles: formal upright, informal upright, slanting, cascade, and semicascade. These classifications are based on the overall shape of the tree, and how much the trunk slants away from an imaginary vertical axis.

The numerous Japanese bonsai styles are principally variations of these five basic styles. The styles given here apply to trees with single trunks. The single trunk style is a basic design that is simplest to shape because the one trunk determines the overall composition.

The formal upright style has classic proportions and is the basis for all bonsai. It is the easiest for a beginner to develop because it requires the least experimentation, avoids the problem of selective pruning, and should almost immediately become a displayable bonsai.



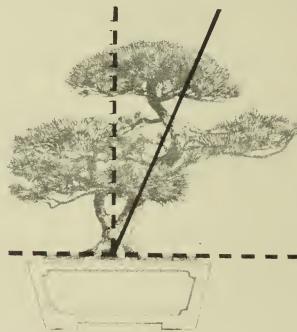
The formal upright style is considered the easiest for the novice bonsai grower.

In this style, the form is conical or sometimes rounded and the tree has an erect leader and horizontal branches. One of the branches is lower and extends a little farther from the trunk than the others.

Also, the two lowest branches are trained to come forward on the front side of the tree, one slightly higher than the other. The third branch of this style extends out in back of the tree at a level between the two side branches to give the plant depth. Plants in the formal upright style look best in oval or rectangular containers. Do not center the plant when placing it in the container. Plant it about a third of the distance from one end.

In choosing a nursery plant for this style, make sure the trunk rises from the ground in a fairly straight line. The trunk should be straight and should not fork or branch out for the total height of the tree. Trim off the small branches or twigs that are too close to the base and near the main stem. These branches detract from the overall composition.

The informal upright style has much the same branch arrangement as the formal upright style, but the top—instead of being erect as in the formal upright style—bends slightly to the front. This bend makes the tree's branches appear to be in motion and enhances the look of informality.



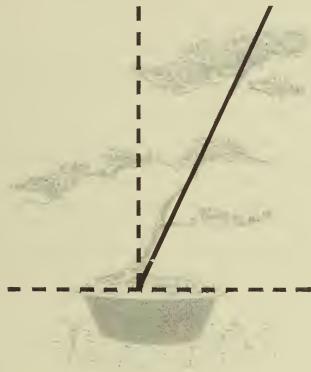
The trunk in the informal upright style bends slightly to the front. This bend helps to give the style its look of informality.

Many nursery trees are naturally slanted. This makes them well suited to the informal upright style. Check the tree's slant by looking down at the trunk from above—from this angle the top should slant to the front. If this view is not attractive, you may move the rootball to slant the tree in another direction. If you choose a vertical tree at the nursery, and want to train it in the informal upright style, simply tilt the plant when potting it. When you do this, trim the branches and foliage

so they are scaled to the size of the tree.

The informal upright style looks best in an oval or rectangular container. It should be planted, not in the center of the container, but a third of the distance from one end.

In the slanting style, the trunk has a more acute angle than in the previous styles. The lowest branch should spread in the direction opposite to that in which the tree slants. The top of the tree is bent slightly toward the front. The lower branches are arranged in groups of three, starting about one-third the way up the trunk. Slanting trees in nature are called "leaners"—trees that have been forced by the wind and gravity into non-vertical growth. The attitude of the slanting style



In the slanting style the trunk has a more acute angle than in the informal upright style. The lowest branch spreads in a direction opposite to that in which the tree slants.

falls between the upright and the cascade styles. This style looks best planted in the center of a round or square container.

In the cascade style the trunk starts by growing upward from the soil, then turns downward abruptly, and reaches a point below the bottom edge of the container. For this reason, the container should be placed on the edge of the table, or a small stand. The cascade style has most of its foliage below the soil surface. This style is representative of a natural tree that is growing down the face of an embankment.

Training a tree in the cascade style takes longer than in the slanting style. Choose a low-growing species instead of forcing a tree that normally grows upright into an unnatural form. Bend the whole tree forward so one back branch is vertical and the side branches fall naturally. A cascaded planting usually looks best in a round or hexagonal

container that is higher than it is wide. The tree should be planted off-center from the cascading side.



The cascade style of bonsai represents a natural tree growing down the face of an embankment. A cascaded planting usually looks best in a round or hexagonal container.

The semicascade style has a trunk that is allowed to grow straight for a certain distance, and then is cascaded down at a less abrupt angle than in the cascade style. The cascading branches are thought of as the front of the tree, and the back branches are trained closer to the trunk than in the other styles. The semicascade should not reach below the bottom of the container, but should go below the level of the soil surface.

Plants that are well adapted to the cascade and semicascade styles are prostrate junipers, and flowering plants such as chrysanthemums, wisteria, willows and star jasmine.

Before potting a tree for bonsai in any of the five styles, keep in mind the image of how the tree will stand in the container. Don't plant a tree one way, and then uproot it to make a change. Keep your overall theme in mind when planting bonsai. Upright trees should have a stabilized look in the container; slanted and cascaded styles often have their upper root surfaces exposed to imitate plants that grow this way in nature.

No matter what style of bonsai you choose—whether single trunk specimens or groups of trees from single roots—everything depends on your selection of plant material, and your ability to visualize the bonsai's final form.

The easiest and best method for the beginner to obtain bonsai is to buy nursery stock and develop his own. These plants come in one to five gallon cans and their root systems have become adapted to cramped conditions. Buy only young, healthy



The semicascade style has a curving trunk that does not reach the bottom of the container as in the cascade style. Prostrate junipers and flowering plants are well adapted to both of these styles.

plants when purchasing nursery stock. When searching for potential bonsai among nursery stock do the following:

—look for plants that are well rooted and well branched. The plant must be able to withstand severe initial pruning.

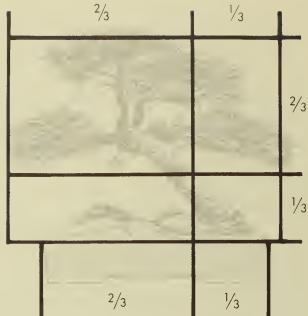
—inspect the overall plant and then push back the foliage and examine the base from all sides. See if the foliage is full enough to be shaped into an interesting bonsai. Check to see if branches are where you will need them.

—do not purchase a plant that cannot be easily transplanted to a pot.

Do not thin the root system excessively all at once when placing the plant in a smaller container. By thinning the roots gradually and reducing the root system safely over a period of years, you will not damage the plant. If you prune and shape first and neglect thinning the roots, some plants may die.

When shaping your bonsai, strive for flowing form. Visualize the overall theme and try to get a three dimensional effect. Remember to select a front, back, and sides of your bonsai before pruning, and don't forget to examine the roots that will influence the growth of these areas.

For overall design the "Rule of Thirds" is a simple concept to use as a basis for obtaining a pleasing form for your bonsai. The "Rule of Thirds" assures you of getting the proper division of space. In this aid to design, the total space is divided into thirds—both horizontally and vertically. Use your pruning shears judiciously to make changes that benefit your bonsai. Fine adjustments are made by wiring and bending and thinning. Remember that a badly designed bonsai will not grow well.



The "Rule of Thirds" is a useful design aid when planning the overall form of your bonsai. The total space of plant and container is divided into thirds, both horizontally and vertically.

Three basic operations are necessary to establish the basic form in bonsai culture: pruning, nipping, and wiring. You will need the following basic tools: a pair of sharp hook-and-blade pruning shears; a garden trowel; blunt sticks; a pair of sturdy wire cutters; copper wire of various lengths; and a sprinkling can. Also useful are scissors for trimming leaves, tweezers for nipping, and brushes for cleaning top soil.

Here are some tips to keep in mind:

—make all cuts above a bud, a side branch, or a main fork of the tree. Remove all buds except those on the outside of the trunk to force the growth outward and upward.

—leave stubs flush with stem; long stubs serve as an entry for insects.

—avoid cutting back so far that you weaken the main branches.

When pruning, keep branches growing toward an open space instead of toward each other or the trunk. Do not shear bonsai as you would cut a hedge; shearing makes the plant look artificial. After deciding on the foliage form for your bonsai, remove all crossed branches and any dead branches. Then thin other branches until the tree takes on the form you selected. If you want to slant a tree that has been growing in an upright position and insure that branches take a normal shape, prune it in an upright attitude, and then tip it to where it should be and work on it that way.

Next, cut back new growth and thin out excess branches. When pruning an upright style, remove unneeded side branches and leave the center ones that will fill out as they grow. Space your pruning schedule, even if the plant has heavy foliage. Plants must have a certain number of leaves for

photosynthesis. Protect pruning scars when removing heavy wood from thick branches or from the trunk. Cut the wood as close to the trunk as possible, pare the stump flush, then scoop it out with a chisel, making a shallow wound that will heal without looking unsightly. Treat these wounds with grafting compound and they will be unnoticeable after healing. Several years must pass before bark will grow over these cut surfaces and replace the scar tissue.

A tree usually requires only one heavy pruning in its life to establish its basic form. After this initial pruning, shaping is done by nipping. Nipping, or pinching back is done to shape and develop the trunk and to control the overall size of the plant. Nipping controls new growth before it becomes so dense that it must be pruned. A twiggy plant can be made more dense when it is nipped. When all terminal buds on a branch have been pinched, several side shoots develop. In this way side growth is stimulated. This will give the plant a bushier look. Nipping is done not only to shape a plant but to develop more luxuriant foliage. As the new growth tips show up, nip them with your fingers, twisting rather than cutting or pulling. Also nip off tiny spurs that appear on the trunk or along heavy branches. These may develop into unsightly suckers that will leave scars when removed. Do not overdo this removal; be careful not to damage the foliage you leave on the plant. After the top of a bonsai is pruned, trim the roots. Try to keep all fibrous roots and maintain a balance, if possible, of one branch for one root. Remove any roots that were damaged in digging. Leave the surface root system intact and make it appear as if the roots cling to the soil surface. Prune roots with sharp, sloping cuts to avoid damaging them.

The wiring and bending of branches that give bonsai its shape is unique to the art. Wiring is done after pruning when the tree has been thinned to essential branches. Copper wire is usually used for shaping bonsai because it is flexible. The sizes of copper wire that are best for bonsai work are 10, 12, 14, 16 and 18.

Wire evergreen trees only during their dormant period when the branches can be shaped without damaging growth. Wire deciduous trees only during their growing season.

The day before you wire a plant do not water it; this will make the branches more flexible. Once a branch has taken on its trained form, remove the wire, straighten out its twists and flatten it with a mallet for reuse.

Wiring and shaping should begin at the lowest point on the tree, working upward. Do the following when wiring:

1. Anchor the end of the wire at the base of

the tree before winding it. Push the end of the wire deep into the soil.

2. Wire from the trunk to the main branch. Use a foam pad under the wire to prevent damaging the bark. Keep the turns about  $\frac{1}{4}$ -inch apart and spiral upward at a 45 degree angle. Do not wire too tightly, and do not damage leaves or stems.

One length of wire can serve for two branches by anchoring the center of the wire at the trunk. After wiring, the plant is shaped or bent by hand. Wire should be kept on the plant for about one year. Remove the wire before the bark becomes constricted; ridges will form if the wire is left on too long. When removing a wire, start at the outermost end of branches and take care not to harm leaves, twigs or bark.

Most plant material for bonsai has long roots that will not fit into a bonsai container. For this reason a training pot is used. The training pot is larger than a bonsai container and holds the heavy roots, which are gradually cut back, for a period of years until small, fibrous roots develop.

All kinds of containers are used for training pots: clay saucers, plastic containers, and wooden boxes of many different sizes. Many of these clay and plastic pots are available at garden centers. The azalea pot and the bulb pan are especially suitable. The pot should be just large enough to accommodate the tree's root system. It should be similar in shape to the bonsai pot which will eventually replace it.

For example, an upright tree, destined for a low, flat container, should be grown in a fairly low training pot. A cascading tree, to be planted later in a high bonsai pot, should be trained in an ordinary flower pot. Make sure that all training pots you use have drain holes at least  $\frac{1}{2}$  inch in diameter. Choose a pot in which to display your bonsai when the training of your bonsai is sufficiently advanced.

The color of the pot should contrast with the tree's foliage. Use white, tan or green pots for trees with brightly colored flowers or fruits. Use unglazed pots with pines and deciduous trees.

Bonsai plants must be anchored to their containers until the roots take hold. One method used to anchor the plant is to tie it down with wires leading up through the screens that are placed over the drainage holes in the container. After tying the plant to the container, adjust the plant's elevation.

At the end of the first year, the tree is usually transplanted from its training pot into a pot suitable to its dimensions. The next part of this article (November-December issue) will discuss potting, repotting and the care of your bonsai.

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6608 Avenida Bizarro, La Jolla 92037

**FLOWER ARRANGERS' GUILD OF S.D.**  
First Thurs., Casa del Prado, 9:00 a.m.  
Pres: Mrs. James Ard—276-6398  
3031 Karnes Way, S.D. 92117

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### CONVAIR GARDEN CLUB

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6197 Arno Drive, S.D. 92120

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Second Mon., Homes of members, 10:30 a.m.  
Pres: Mrs. Herbert Bissell—453-2963  
2664 Costebelle Dr., La Jolla 92037

### IKEBANA INTERNATIONAL CHAPTER NUMBER 119, Fourth Wed., Casa del Prado

10:00 a.m.  
Pres: Mrs. B. Donald Gaw—485-0116  
13818 Tam O'Shanter Ct. Poway 92064

### LA JOLLA GARDEN CLUB

First Tues., 1:00 p.m., St. James Hall  
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Pres: Mrs. Bolivar Roberts—454-4988  
939 Coast Blvd., La Jolla, 92037

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Third Mon., 10:00 a.m., Homes of mem.  
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758 Cordova Street, S.D. 92107

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Fourth Tues., San Carlos Club, 6955 Golfcrest Drive  
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4235 Cobalt Drive, La Mesa 92041

### SAN DIEGO BONSAI SOCIETY, INC.

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Pres: Dr. Herbert Markowitz—224-8552  
876 Armada Terrace, S.D. 92106

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Pres: Mrs. Joseph Kennedy—223-6183  
2260 Catalina Blvd., S.D. 92107

### SAN DIEGO CACTUS & SUCCULENT SOCIETY, 2nd Sat., Casa del Prado, 1:30 pm

Pres: Mr. Martin Mooney—427-6796  
97 "K" Street, Chula Vista 92011

### SAN DIEGO CAMELLIA SOCIETY

Third Wed., Casa del Prado, 7:30 p.m.  
Pres: Capt. Ben H. Berry—435-2562  
471 Country Club Lane, Coronado 92118

### SAN DIEGO CHAPTER, CALIFORNIA NATIVE PLANT SOCIETY, Fourth Wed., Casa del Prado, 7:30 p.m.

Pres: Mr. Fred Sprout—222-8938  
P.O. Box 7497, San Diego 92107

### SAN DIEGO COUNTY DAHLIA SOCIETY

Fourth Tues., Casa del Prado, 7:30 p.m.  
Pres: Mr. Abe Janzen—277-4473  
3521 Belford Street, S.D. 92111



### SAN DIEGO COUNTY ORCHID SOCIETY

First Tues., Casa del Prado, 7:30 p.m.  
Pres: Mr. David Grimes—755-0798  
13651 Nogales Drive, De Mar 92014

### SAN DIEGO COUNTY WILDLIFE FED.

Pres: Frank Tipton—726-3853  
765 Alta Vista Drive, Vista 92083

### SAN DIEGO EPIPHYLLUM SOCIETY

Second Wed., Casa del Prado, 7:30 p.m.  
Pres: Mr. Donald Irwin—469-2469  
4124 N. Rogers Rd., Spring Valley 92077

### SAN DIEGO FUCHSIA SOCIETY

Sec. Mon., Casa del Prado, 7:30 p.m.  
Pres: Mrs. Fran Calamari—232-8232  
2867 "G" Street, S.D. 92102

### SAN DIEGO GERANIUM SOCIETY

Sec. Tues., Casa del Prado, 7:30 p.m.  
Pres: Mrs. Wm. Cavanaugh—224-9208  
4377 Loma Riviera Ct., S.D. 92110

### SAN DIEGO/IMPERIAL COUNTIES IRIS SOCIETY, Third Sun., Casa del Prado, 1:30 p.m.

Pres: Mrs. Eugene Cooper—295-7938  
4444 Arista Drive, S.D. 92103

### SAN DIEGO ROSE SOCIETY

Third Mon., Casa del Prado, 7:30 p.m.  
Pres: Mr. John Farleigh—295-5404  
2217 Whitman St., S.D. 92103

### SAN DIEGUITO GESNERIAD CLUB

Pres: Mrs. Roman Shore—728-7044  
P.O. Box 828, Fallbrook 92028

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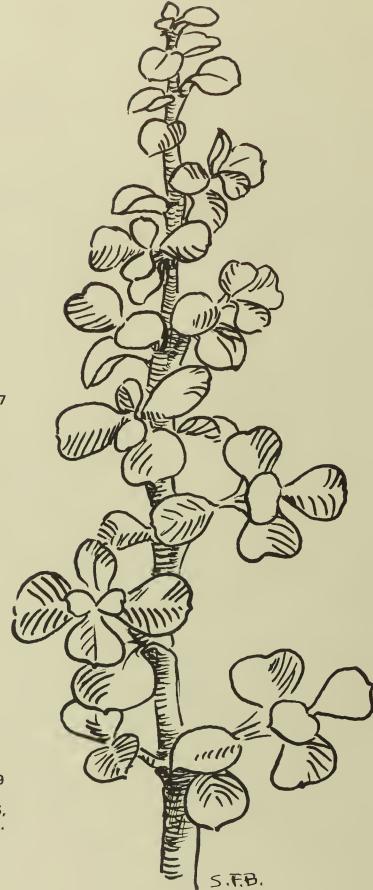
Four meetings per year, Oceanside Federal Savings, Vista, California  
Pres: Mr. Ray Cheskis—744-3851  
418 Buena Creek Rd., San Marcos 92069

### SOUTHWESTERN GROUP, JUDGES' COUNCIL CALIFORNIA GARDEN CLUBS, INC., First Wed., Casa del Prado, 10:30 a.m.

Pres: Mrs. Donald Innes—225-1464  
3211 Trumbull, S.D. 92106

### THE VILLAGE GARDEN CLUB OF LA JOLLA, Fourth Thurs., 1:00 p.m., L.J. United Methodist Church, 6063 La Jolla Blvd.

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RETURN REQUESTED  
RETURN POSTAGE GUARANTEED

CALIFORNIA GARDEN  
San Diego Floral Association  
Casa Del Prado, Balboa Park  
San Diego, CA 92101

HAVE YOU EVER DRIVEN THROUGH A BURNED OVER AREA AFTER A FOREST FIRE?  
IF YOU HAVE, THEN YOU HAVE HEARD THE DEAFENING SILENCE AND EXPERI-  
ENCED THE DREADFUL FEELING OF HORROR THAT GRIPS YOUR HEART  
AT THE SIGHT OF SUCH OVERWHELMING DEATH AND DEVASTA-  
TION. WE ARE SURE THAT YOU ARE AWARE OF THE  
DANGER OF FIRE, ESPECIALLY NOW. PLEASE  
HELP EVERYONE LEARN TO BE CARE-  
FUL WITH FIRE SO WE MAY  
SAVE OUR FORESTS.

*TEXT BY Skipper Cope.  
DRAWING BY Sally Bancroft.*

